METEOROLOGICAL OFFICE

NEWSLETTER FOR CLIMATOLOGICAL OBSERVERS IN ENGLAND AND WALES

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FOR

CLIMATOLOGICAL OBSERVERS

IN

ENGLAND AND WALES

NO. 12

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OBSERVERS NEWSLETTER MARCH 1984

List of Contents

P.1	List of Contents
P.2	Editorial
P.3,4	News of Stations, Who's Who, Vandalism.
P.4	The Transfer of the Climatological Station at Lincoln to Canwick.
P.5	The Final Extract from an Introduction to the Work of the Meteorological Office.
P.6	Readers Letters
P.7,8,9	The Initial Extract from Archiving and Quality Control of Climatological Data by Dr G W Bryant
P.9	Field Study Courses - Summer 1984
P.10	Weather Summary July - December 1983

Editorial

Welcome to another edition of the Newsletter. How quickly the last 6 months have passed by, no doubt the mild winter we have experienced in the south this year has something to do with that.

You may recall that following promotion to Higher Scientific Officer, Dizzy Allen has remained in her old job taking on extra responsibility and a new person was required to take over the post previously occupied by George Swift. This post has now been filled by Dick Brooks whom we welcome to Met O 1e.

Dick informs me that there are still a few places available on the co-operating observers courses which are held at the Meteorological Office College, Shinfield Park, Reading on the following dates:

11-15 June 1984
2- 6 July 1984
3- 7 Sept 1984

If anyone would like to attend one of the above courses please contact Dick Brooks at the Meteorological Office, Met O 1e, Eastern Road, Bracknell, Berkshire, RG12 2UR, telephone Bracknell (STD 0344) 420242 ext 2266. It should be noted that these courses are only available for those people at our recognised co-operating stations and that any students attending should be over 17 years of age.

Two items of general interest included in this issue are the final extract from 'An Introduction to the Work of the Meteorological Office' and with kind permission from Dr G W Bryant the first extract from his article entitled 'Archiving and Quality Control of Climatological Data'.

We are always very pleased to include letters from you in the Newsletter. Mr J C W Day the observer at Walsall wrote in and his interesting letter on his involvement in meteorology for the past 50 years can be found on page 6.

W M Longworth

News of Stations

North West Water have informed us that following the retirement of Mr H Jones, the observer at Oswestry, this station which has been part of the climatological network since 1942 has now regrettably closed.

We are also sorry to lose the services of the climatological stations at Caistor whose records were first published in the Monthly Weather Report in 1965 and Chopwellwood whose history of co-operation stretches back for over seventy valuable years. Two further stations to close recently are the climatological stations at Bridgend and Cors Fochno.

The agro-met station at Corwen has also closed down after a long period of co-operation with the Meteorological Office.

Two climatological stations have recently been resited. Shrewsbury has now been replaced by a new site at Shelton and Lincoln has moved to a new site at Canwick. The old site at Lincoln was plagued by vandalism to such an extent that a more secure site was needed. We hope the new station at Canwick will allow the valuable climatological records to begin again and continue undisturbed.

To help redress the balance, following the loss of the above stations, I am very pleased to welcome to the co-operating network a new station named Coventry School - Bablake (where, incidentally, our current Assistant Director J M Nicholls received his secondary education!)

Who's Who in Met O 1 - Dick Brooks

On leaving school in 1970 Dick joined the Meteorological Office as an Assistant Scientific Officer and was posted to the Central Forecast Office at Bracknell.

In 1983, on promotion to Scientific Officer, he left C.F.O. to take up his present post. This involves helping in the administration of the voluntary climatological network, organizing the observers courses each year and inspecting some of the stations in the climatological network.

Married in 1978 he has a son of four years and a new addition is expected in a few months time.

Vandalism

Unfortunately, as in the case of our climatological station at Lincoln, vandalism can be an annoying and expensive problem. What action can be taken if a station is subject to some form of vandalism, whether it takes the form of the removal of instruments or perhaps the breaking of equipment in the enclosure?

In some cases the situation of the station might encourage unwanted attention, but obviously it is not always possible to move to a new station site. The first priority therefore is to try and make the enclosure secure from such attacks. This can be accomplished by erecting open fencing or paling together with a lockable entrance. Although this might not stop all the unwanted intruders, it should at least deter some of them.

It has to be remembered that if some form of fencing is put up, care must be taken not to adversely effect readings in the enclosure. This will not be done if the distance of any obstacle, which includes the fencing around the enclosure, from the rain-gauge is at least twice the height of the obstacle.

Inside the enclosure, the Stevenson screen or equivalent approved screen should be made secure by means of a padlock. The screen can also be used to provide a safe place to store the rain measure when not in use.

Providing the enclosure is as secure as it can be possibly made, insuring the contents might be a worthwhile consideration. The following list gives a selection of instruments and equipment with their basic prices.

Screen Ordinary	£333	Grass Minimum Thermometer ...	£19
" Large	£450	Maximum " ...	£24
" Stand	£110	Minimum " ...	£20
Sunshine Recorder Frame	£455	Ordinary " ...	£18
" " Sphere	£ 91	Ordinary (soil) " ...	£20
Rain-gauge 5 inch	£ 87	Rain measure 5 inch (mm) ...	£ 6

As can be seen from the above prices the cost of replacing equipment and instruments is very expensive, so it is well worthwhile to ensure your station is not an easy target for vandals.

THE TRANSFER OF THE CLIMATOLOGICAL STATION AT LINCOLN TO CANWICK

A summary by Christine Godfrey the observer at Lincoln.

The problem of vandalism which is common to many stations came to a head in April 1983 after the thermometers in the screen had been taken or broken yet again. The sunshine recorder had been out of use for some time.

After the situation had been reported to the City Transportation Committee, discussed with the Anglian Water Authority and Met O 1e the instruments were moved to the Canwick Sewage Disposal Works approximately 2½ miles southeast of the old site. With the invaluable help of Mike Parkin of the Nottingham Weather Centre the move was carried out on September 7th 1983 with no break in the readings.

Duties are now shared between the Anglian Water Authority and the City Council. With the recent arrival of the new maximum thermometer the instruments are now complete with the exception of the sunshine recorder for which the site is not suitable.

THE FINAL EXTRACT FROM AN INTRODUCTION TO THE WORK OF THE METEOROLOGICAL OFFICE

Meteorological Office Services

Guidance from CFO is used as the framework for forecasts issued by the 60 or so Offices in the UK directly concerned with the provision of forecasts to the Community.

The Principal Meteorological Office at London (Heathrow) Airport produces significant weather charts which, with the upper wind and temperature forecasts derived from CFO, are disseminated by facsimile to most UK Civil Aviation airports for issue to aircrew as self-briefing packs. These charts are also sent to European airports to cover flights to North America. RAF and Army Aviation needs are met by a combination of self-briefing material, produced by the Principal Meteorological Office at RAF High Wycombe, and personal briefings and documentation issued by the Forecast/Observing Offices located on most RAF Stations. The Royal Navy operates its own forecasting service based on the guidance material from CFO. Annually over 2.2 million forecasts are prepared for all Aviation requirements.

There are few activities which are not sensitive to the weather; some examples are given in the previous extract. National and regional forecasts for general purposes are disseminated by the Press, radio and television and by the Post Office recorded Automatic Telephone Weather Service in some areas. More specialist needs are met by the issue of tailor-made forecasts and warnings; among the subscribers are many branches of industry, agriculture, public utilities, local and national Government, and the Offshore Oil Industry. Many of these special services are provided by Weather Centres in eight major cities. The Weather Centres and several Aviation Forecasting Offices also h ndle many thousands of personal enquiries by telephone from the public. In all well over 2 million forecasts are issued annually to the community in addition to at least 30 million calls made to the Automatic Telephone Weather Service. Requests for climatological information number around 30,000 per year. Such data are used extensively in the planning stages of construction projects water resources, agriculture and industry.

The Offshore Oil Industry is an important subscriber to Meteorological Office services. Many production and exploration rigs receive routine forecasts of wind and sea state in the North Sea. The weather is a critical factor during the tow-out and positioning of new rigs; special forecasts are issued which emphasize the likelihood of "weather windows" - periods of several successive days with light winds and relatively calm sea. The oil industry is served by specialist forecasts at London Weather Centre. A ship routeing service, manned by Merchant Marine Captains, operates from CFO and a Royal Navy detachment at Bracknell mans the Storm Tide Warning Service; this unit issues warnings of abnormally high or low tides generated by particular combinations of wind and pressure around the British Isles.

In these notes the other duties of the Meteorological Office can only be briefly mentioned. A wide range of research tasks are carried out covering all aspects of meteorology and forecasting. The National Meteorological Library holds a fully comprehensive collection of books and scientific papers and the Archives retain all past records and charts. One Branch is occupied with the development and calibration of meteorological instruments and equipment and another with the control of observational techniques. A section of another Branch is devoted to Agricultural Meteorology; some of this work is co-ordinated with the Advisory Services of the Ministry of Agriculture, Fisheries and Food. Professional training of UK and some overseas meteorologists at all staff levels is carried out at the Meteorological Office College near Reading and many senior staff act as executive or advisory members of national and international committees.

Meteorology is a fast-developing science and as one of the most technically advanced meteorological services the Meteorological Office is in the forefront of worldwide efforts to improve our knowledge of the science and the accuracy of forecasts.

Readers Letters

Walsall Climatological Station — From the observer at Walsall

HALF A CENTURY OF WEATHER WATCHING

It started in 1932, when encouraged by Mr Cleland I set up a raingauge. I was proud to see my name appear in British Rainfall 1933. The raingauge was made of tinned steel and had been purchased from Philip Harris & Company of Birmingham. In 1937 I replaced it by a copper one which I bought from the Met Office and it cost £1. 2. Od (£1.10) and the glass measure was 4.4d (0.22p). The previous year I had replaced my maximum and minimum thermometers by the standard pattern sheathed type - the maximum was 16.6d (0.83p) and the minimum was 13.6d (0.68p) - and they came complete with NPL Certificates.

In June 1942 I received a letter from Mr J Glasspoole inviting me to become a voluntary Climatological Station observer. This prompted me to replace my home made Stevenson screen with a Bilham type screen and I see that it cost £6. 17. Od (£6.85) including the stand - they were well made in those days for it is still in use.

By 1952, I notice, the cost of a minimum thermometer had increased to £2. 2. 4d (£2.12).

In 1948 came the big occasion of my first official station inspection, and Mr B Oddie came and carried out what is now a familiar routine. After Mr E Kinchott came in 1964 the Met Office even issued a 'Certificate of Inspection'. Two years ago my station was inspected by a gentleman well known by his appearance as a weather-man on local TV. Inspections are still enjoyable occasions for a pleasant chat, and as each inspector is a little different from his predecessor I always wonder what the next will be like. Inspections remind me of a biennial, and somewhat hazardous task. My neighbour has two ash trees in his garden lying SE of the station and they make a healthy growth each year. This involves a lopping session in which my neighbour willingly co-operates- he climbs the ladder and does the sawing while I stay below and steady it. Afterwards I collect the fallen branches and am always glad to see John safe and sound on the ground again.

In January 1948 I started sending reports to Mr Kelly the then Superintendent of the Birmingham & Midland Institute and have done so ever since, although the Institute was taken over by Birmingham University in 1965. The Severn Trent Water Authority also receive reports as do my Local Authority. The introduction of Metform 3208B in 1978 was much appreciated, particularly because it obviated the monthly slog with my Humidity Slide Rule Mark I.

Since my thermometers were replaced on conversion to centigrade I have, fortunately, had no mishaps with them for I believe they must be almost 'pearls beyond price' judging from the fact that two fibre-tip pens have just cost me £6.77. But on the whole watching what Sir Napier Shaw called the 'Drama of Weather' is a relatively cheap and very satisfying hobby.

J C W Day
Aldridge, Walsall

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Archiving and quality control of climatological data

By G W Bryant

(Meteorological Office, Bracknell)

Summary

A very large amount of climatological data is now handled every month by the Climatological Services Branch. As a result, a routine procedure has been developed which uses computer methods to control the quality of and to archive the data. An account of this procedure is presented together with a brief description of some of the quality control techniques which are used.

1. Introduction

Meteorological observations for climatological purposes have been made at stations throughout the United Kingdom for many years. The data are transcribed at the stations on to manuscript forms which are returned monthly to the Meteorological Office where they are held as permanent archive records; since 1884, the data have been published in the Monthly Weather Report. Some 30 years ago, the need for more powerful methods of climatological data processing led to the use of punched cards, which had already been used successfully with marine data. More recently, climatological archives have been compiled on magnetic tape, and the availability of information in this form has made possible much greater and more sophisticated exploitation of the data for research and enquiry purposes. Moreover, computer processing methods have a further major advantage in that a much more consistent and rigorous inspection of the data can now be undertaken.

During the transfer from visual and instrumental observations to archive records the information is first recorded in the observation register and is then transcribed to manuscript tabulations at the station; on receipt at the Meteorological Office, data are keyed to disc and are subsequently transferred to magnetic tape. With about 650 stations in the United Kingdom now making returns, over 3 million pieces of information go through this process every month, and errors can occur at every stage. Detailed quality control of this volume of data by visual inspection is quite impracticable, but by the use of computer methods all the data are subjected to a large number of quality control checks; corrections are made at several stages in the course of data entry, and archived data are now of very high quality.

The introduction of computerized methods of quality control required the solution of many problems. Although the solutions must depend both on the type of data and on the computing power available, the problems themselves must be common to all national meteorological services faced with the need to archive climatological data. However, apart from the general survey of Filippov (1968) and descriptions of the methods used in Canada (Potter 1969) and Israel (Walther and Elbashon 1974), there

appears to be little published information on the subject. The following report describes the techniques which have been developed during the past few years by the Meteorological Office, and which are currently used for land surface data by the Climatological Services Branch.

2. Types of data

The stations recording climatological data within the United Kingdom vary greatly in the facilities that they have available and the hours during which they can operate and this is reflected in the type and volume of data submitted to the Meteorological Office.

The largest volume of data is collected by official Meteorological Office stations which are staffed by trained observers who make a full range of observations, usually every hour. Data recorded include not only such fairly standard items as wet- and dry-bulb temperatures, pressure, visibility and present weather but also more detailed observations such as hourly rainfall amounts and duration, hourly mean wind speeds and directions (usually), and the type, height and amount of low, medium and high cloud. There is some variation but each station observes about 30 weather elements each hour of the day, and is referred to as an 'hourly station'. There are about 50 such stations in the United Kingdom; their main purpose is to offer forecasting services to the public, to commercial interests and to military and civil aviation. Most of them are in fact based at airfields and weather centres.

Many Meteorological Office stations which would otherwise be included in the list of hourly stations are not staffed to make hourly observations throughout the day. Auxiliary stations, whose prime duties do not involve forecasting, are in a similar situation and these all form a class of 'fixed hourly stations' which, wherever possible, make observations at each of the eight synoptic hours (00 GMT, 03 GMT, 06 GMT and so on). However, some stations do not operate at night, others close at weekends, and at some (coastguard stations, for example) the observer may be called away on more pressing duties. The result is a considerable variation of frequency of observation among these stations.

Both the hourly and fixed hourly stations also complete a monthly summary of daily values. This summary includes day and night maximum and minimum temperatures, grass and concrete minimum temperatures, rainfall totals, sunshine duration, 09 GMT soil and earth temperatures and brief weather descriptions which indicate the occurrence during each day of events such as fog, hail and snow.

The official stations are, however, in the minority; the majority of stations are operated by voluntary observers. These are known as 'co-operating stations', and are maintained by such diverse groups as health resorts, schools, water authorities and many private individuals as a voluntary service. Most of these stations supply their own instruments which are inspected regularly by Meteorological Office staff. Observations are made only once per day at 09 GMT and the range of data reported is restricted in some cases by the availability of suitable instruments. The items reported by co-operating stations are generally similar to those in the summary of daily data mentioned above with the addition of such items as spot wind speed and direction, visibility and pressure which relate only to conditions at the observing hour, usually 09 GMT. Although the standard of data tends to be rather more variable than at the hourly and fixed hourly stations, the co-operating stations form an extremely valuable part of the climatological network in the United Kingdom.

Finally, there is an anemograph network of about 160 stations; these are each equipped with an anemometer usually exposed at a height of about 10 m above the ground. They tabulate, from the anemograph traces, the speed and direction of both the hourly mean wind and maximum gust in each hour. Some of these stations are also part of the climatological network and a few are equipped with a second anemometer at a higher level.

(To be continued)

FIELD STUDY COURSES - SUMMER 1984

Each year the Royal Meteorological Society and the Field Studies Council sponsor together two courses aimed at the interested amateur or layman who wants to find out more about the weather.

The courses contain talks and films on such topics are "Why it rains" and "Satellites in Meteorology"; tuition on understanding and drawing up weather charts and using them to make forecasts; whilst outdoors, routine observations are made and experiments such as tracking weather balloons are tackled. No previous knowledge of meteorology is assumed.

"Understanding Weather" directed by Dr Keith Weston of the University of Edinburgh, will run from 17-24 August 1984 and is held at Malham Tarn Field Centre, 1300 ft up in the Yorkshire Dales. "Weather Forecasting" is directed by Dr Bob Riddaway and Dr Geoff Jenkins, both of the Meteorological Office, from 22-29 August 1984 at the Nettlecombe Court Field Centre, a beautiful old country house in the Exmoor National Park.

The fee for each course is £115, which includes full board at the Field Centre. There are four other courses run by the Royal Meteorological Society concerned with weather and particular outdoor activities - Sailing; Hill Walking; Mountain Climbing and Birdwatching.

Full details of any of these courses may be obtained by writing (or telephoning) the Executive Secretary, Royal Meteorological Society, James Glaisher House, Grenville Place, Bracknell, Berkshire, RG12 1BX (Bracknell (0344) - 422957).

WEATHER IN THE UNITED KINGDOM JULY - DECEMBER 1983

The hope of a long spell of warm summer weather after the cold and very wet spring was more than realized in July and August. By a narrow margin July was the hottest calendar month in the 325-year historical record for central England with mean temperatures about 3.5 °C higher than average. However, a few mid-month to mid-month periods, including June-July 1976 and July-August 1975, have been even hotter. Although extreme maxima were, in general, rather lower than in 1976 32 °C was exceeded somewhere each day between the 11th and 16th with 33.7 °C at Liphook, Hampshire, on the 16th. After a cool start August was also much warmer than usual, being about the same as in 1976 but not as hot as in 1975. Temperatures exceeded 30 °C in places on the 19th with 32.1 °C at Yeovilton, Somerset. Both months were also sunnier than usual. Generally it was the second driest summer over England and Wales in the last 100 years; only 1976 was drier. Nevertheless, thunder occurred somewhere or other on about one day in three, the storms being widespread on occasions, especially during the second half of July. Large daily rainfall totals included 75.6 mm at Kew Gardens, London, on 6 July, 86.5 mm at Bala, Gwynedd, on 16 July, and 77.1 mm at Cwmystwyth, Dyfed, on 16 August. September brought a marked change to unsettled, mostly rather cool weather with periods of rain or showers at times during the first three weeks. The 1st was, however, very warm in the east with a maximum of 25.8 °C at Elmstone, Kent, but on the 11th temperatures failed to reach 15 °C except in parts of the south and west. The rainfall was heavy at times, particularly in Wales and central and western parts of England with 96.0 mm at Nantmor, Gwynedd, and 82.9 mm at Moel Cynnedd, Powys, on the 2nd. It was also windy at times with gusts of 75 kn at Gwennap Head, Cornwall, on the 3rd and 69 kn at Durham on the 5th. The remainder of the month was mainly dry with some very warm days; on the 24th the temperature reached 27.1 °C at Rumleigh, Cornwall.

For three weeks from the beginning of October the weather was changeable before becoming mostly dry with some fog and frost, night and morning; on the 29th the temperature fell to -9.0 °C at St. Harmon, Powys, while on the 30th a minima of -7.3 °C was recorded at Grendon Underwood, Buckinghamshire. Earlier in the month maxima exceeded 24 °C in parts of East Anglia and south-east England on the 4th while the 15th was an especially wet and windy day with rainfall totals of more than 20 mm occurring widely. The mainly dry and mild weather continued until the end of the first week of December making November the driest, with less than half the average rainfall in much of the west and north, since 1956 in England and Wales, since 1958 in Scotland and since 1945 in Northern Ireland. Much of the month's rainfall was recorded on the 25th and 26th with 24-hour totals in excess of 25 mm being widespread, particularly on the latter. Between the 12th and 24th, however, it was rather cold with minima of -10 °C at Preston Wynne, Hereford and Worcester, on the 23rd and -9.2 °C at Audley End, Essex, on the 24th. From 8 December it was unsettled and stormy for about two and a half weeks, and although cold initially, with widespread slight or moderate snowfall over central and northern areas, temperatures soon recovered. Rainfall was heavy at times, particularly on the 8th in the north and west, with 80.9 mm at Holme Moss, West Yorkshire, and in the south-west on the 14th and 18th. The month ended mainly dry with the Christmas period being exceptionally mild; on the 24th and 25th maxima of 14.5 °C were recorded at Hadlow College, Kent, and Waddon, London, respectively, while on the 27th the temperature rose to 15.4 °C at Tynemouth, Northumberland. Late on the 31st severe gale to storm force winds affected the north-east with a 92-kn gust at Lynemouth, Northumberland.